CONFIDENTIAL

file 99

12 MAY 1965

Case No. 5-270

MEMORANDUM FOR: Chief, Procurement Division/OL

ATTENTION : Chief, Industrial Contract Section [redacted] 25X1

SUBJECT : Report on Analysis of Cost Proposal No. 9400-308-31, Submitted [redacted] 25X1

25X1 [redacted]

1. In compliance with your request dated 20 April 1965, we have reviewed the subject proposal. The results are summarized as follows:

(a) Labor: (1) The labor hours are engineering estimates which we are not technically qualified to evaluate. In addition to the program schedule as shown in figure 3.1 of the proposal, the contractor has prepared a "time table" which is divided into 3 phases, showing the number of hours each employee is to work on each phase. See the attached Schedule A.

(2) The direct labor was computed by using the average hourly rate for monthly and semi-monthly payroll employees and the actual rate for weekly employees. The rates in both categories are weighted to include the following type fringe benefits: pension plan, FICA, Blue Cross-Blue Shield, group life insurance and accident and disability insurance costs. The amount an hour of the additive is dependent on the payroll category as follows:

Additive	Payroll Category
$0.88	Monthly
$0.66	Semi-monthly
$0.55	Weekly management
$0.36	Weekly salaried

(b) Material: A listing of the proposed materials is shown on the attached Schedule B. Most of the prices shown are engineering estimates which are not susceptible of audit verification. Our analysis of the proposed material costs of [redacted] revealed that subcontracts compose 60.6% of the proposed material costs, as shown: 25X1

[redacted] 25X1

25X1 A CPFF quotation for [redacted] has been received by the contractor from
25X1 [redacted] as shown in our Schedule B. The contractor's

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SUBJECT : Report on Analysis of Cost Proposal No. 9400.308-31, Submitted [redacted] 25X1

25X1 [redacted]

representative indicated that the fixed fee of 10% was not acceptable to him and that an attempt will be made to negotiate a fixed price contract. To date only an oral quotation has been received on the 25X1 proposed subcontract with [redacted] In view of the above, we suggest that you obtain an evaluation of these subcontracts, together with the other materials listed on Schedule B, from your engineering personnel.

(c) Indirect expenses: The Information Sciences Center is under the audit cognizance of Army Audit Agency. However, since the [redacted] 25X1
25X [redacted] has only been in operation since 1 May 1964, audit determined rates are not available. The contractor has submitted its overhead and general and administrative expense proposal to Army Audit Agency for the period from 1 May 1964 through 31 December 1964. It has proposed an overhead allocation rate of [redacted] per direct labor hour 25X1 and a general and administrative expense allocation rate of 13.65% of total costs less G & A. The contractor is forecasting the same rates for calendar year 1965 and is currently using those rates in its proposal. The current book rate for the engineering overhead for the first 4 months of 1965 is approximately [redacted] per direct labor hour. 25X1 In view of the above, it is our opinion that the engineering overhead 25X1 allocation rate of [redacted] should be reasonable. Research and development costs receive the same accounting treatment as project costs except they are excluded from the G & A base and are not burdened with G & A. Research and development costs are not included in the G & A expense pool; they are charged to cost of sales in the year incurred.

[redacted] 25X1

Chief
Industrial Contract Audit Division

Next 3 Page(s) In Document Exempt

Approved For Release 2005/05/02 : CIA-RDP78B04770A002200060007-6

5 November 1964

DEVELOPMENT OBJECTIVES

IMAGE-INTENSIFIER SCREEN

1. INTRODUCTION

These development objectives describe requirements for an image-intensifier screen to be used for rear-projected images.

Rear-projection viewers have come into standard use for scanning and interpreting photo transparencies. Most of these materials are high-resolution and require great enlargement before the human visual system can assess the total information content. This enlargement, in turn, requires greater projection lamp power in order to attain the necessary image brightness over the entire viewing screen. Increased lamp power is accompanied by greatly increased heat incident on the film so that it is distorted or damaged. There are in existence various techniques for cooling at the film plane, e.g... dichroic mirrors, fans, liquid gates, etc.. In spite of these techniques, there remains the heat vs image intensity problem in high magnification projection of film transparencies which are static or slow moving in the film gate.

It has been postulated that this problem might be solved by intensifying the image at the viewing screen. Such a screen would require minimal power in the projection illumination, but would produce a bright image for the viewer.

2. CONCEPT

2.1 Purpose. These objectives describe a development which would overcome the heat versus image intensity relationship characteristic of high magnification (in order of 100X) rear projection viewers.

2.2 Scope. The primary objective is, that under nominal highlight illumination of approximately 10 foot candles, the image-intensifier screen should provide the viewer with an image of adequate gain and brightness while exhibiting satisfactory performance in many other aspects, such as: resolution, tone range, linearity, color temperature, viewing angle, response time, size, life and cost.

A secondary objective is to provide a means for controlling modulation of image contrast, such as tone-reversal and compression or expansion.

3. GENERAL DISCUSSION

The image-intensifier screen is intended for use on rear-projection viewers, which would be used by one to four persons to scan and interpret high-quality photo transparencies at various magnifications (ranging to 100X). The screen size on these viewers may be as large as 30" x 30". The image-intensifier screen should be designed to require minimum modification of existing viewers.

4. PRIMARY REQUIREMENTS.

4.1 Gain. The gain of the IIS must be such that light within the range of 2800° - 5800° K, falling on the screen at intensity equal to one foot-candle, causes a brightness of 50 foot-lamberts to be radiated throughout a solid angle of 90° (centered on the axial ray). A greater gain is desired -- provided that it does not compromise other performance parameters.

4.2 Emitted Light.

4.2.1 Brightness. The IIS must be capable of emitting a maximum brightness of 50 foot-lamberts; 200 foot-lamberts is the development goal.

4.2.2 Linearity. Gamma. The emitted light must be directly proportional to the incident light at all intensities. Gamma must approximate unity (± 10%).

4.2.3 Brightness should not vary more than 10% (from the theoretical) over the entire viewing area.

4.2.4 Brightness Distribution Lobe. The emitted light should be of relatively uniform brightness (± 10%) throughout a 90° solid angle centered on the emergent paraxial ray.

4.2.5 Color Temperature. The emitted light must fall within the color temperature range of 3500° - 5500°K.

4.2.6 Brightness Levels. The emitted light must display at least ten different, visually distinguishable brightness levels when excited by correspondingly varied incident illumination. As many as twenty different distinguishable levels are desired.

4.2.7 Reflectance. The viewing surface of the IIS shall be designed to minimize reflectance of ambient room light. This requirement is of utmost importance: ideally the viewing surface of the IIS should have reflectance characteristics similar to those of black velvet, in order that maximum modulation transfer can be preserved even in normal room light.

4.3 Resolution. The IIS shall be capable of resolving 10 line pairs per millimeter with a contrast of 100 to 1. The modulation transfer function at 10 lines/mm should be at least 90%: 20 lines/mm at 90% MTF is the design goal.

4.4 Response Time. The IIS must reach 90% theoretical brightness within 10 milliseconds of excitation and must fall below 10% of this brightness level within 10 milliseconds of removal.

4.5 Signal/Noise Ratio. No square inch of the IIS should exhibit a signal/noise ratio less than 100.

4.6 Size. The thickness-and weight-to-area ratio of the IIS should be approximately that of a conventional screen. This IIS may be bread-boarded in 6" x 6" panels. One 12" x 12" operational panel must be delivered. Optional pricing for delivery of a 30" x 30" panel may be given. Feasibility of producing the 30" x 30" units in volume must be indicated.

4.7 Life Expectancy. The IIS must be capable of operating at maximum brightness (at least 50 foot-lamberts) for 200 hours, with no more than 10% degradation in any of the specified performance parameters.

4.8 Power Requirements. The IIS should be adequately served by 110-120 volt, 60 cycle, 15 ampere power supply. Normal fluctuations in the voltage (± 10%) should not perceivably affect performance.

5. SECONDARY REQUIREMENTS.

The following requirements are to be considered if they do not compromise those stated in section 4 (above):

5.1 Contrast Modulation. If the capability is inherent, controllable contrast modulation of the following types is desired:

5.1.1 Complete linear intensity reversal should be available at the option of the operator.

5.1.2 Expansion and compression of the brightness range should be an option available to the operator.

5.2 Monochromatic Sensitivity. The IIS should be sensitive enough to accept illumination from a narrow band of the visible spectrum or the near IR and UV: 6328 A^{o} laser illumination would be a logical consideration. If such were feasible, lens design could be optimized accordingly. In such a case the gain requirements described in 4.1 would be correspondingly.

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NOTICE: [redacted]

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X1 [redacted] Information about the capabilities and experience of can be found in the Company File under that name.

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NPIC 2623

- Agency Association

Note: rom 1965 FY Funds
epending upon availability of FY 66 Funds.

5/18/65 5500-879465

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NPIC

3 Copies for NPIC

1 Develop a Rear Projection Image Intensifier Screen in accordance

X1 with Proposal dated

19 March 1965.

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Proposal in possession of

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APPROVED BY:

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from 1966 FY when available.

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